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A GERMAN COMMON SCHOOL WITH A GARDEN.

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Most of the common schools in the smaller villages of Germany have attached to them a small garden. This garden is intended primarily for the use of the teacher of the school. It serves his table with a few fresh vegetables and fruits in their season and thus indirectly adds a mite to his modest salary. In most instances this garden is used solely as a source of income and pleasure to the teacher. Occasionally, however, some especially active and wide-awake teacher sees in the garden a means of instruction. Here plants can be watched in their development from seed to flower and fruitage; the curled leaves on a choice plant may show where an insect has made its home; a heavily-laden apple tree may suggest the value of pruning; a few pansies or a rosebush rightly placed may awaken ideas of beauty. And so the garden becomes a field for observation. The teacher's nature study charts are supplemented with real flowers and fruits grown in his own garden and with insects, birds, bees, and low forms of life that make their homes in his own hedgerow or feed upon his choicest plants. Pupils working among these flowers, pruning trees, or gathering berries from vines planted and tilled by themselves, may acquire an interest in nature and husbandry which will remain with them throughout their after life. Certainly they will acquire a practical knowledge of the ways in which fruits, flowers, and garden vegetables are planted and cared for which will be of value to them in their future work as farmers or the owners of homes and gardens.

A school of this sort, located at Alfter, a village of some 2,000 inhabitants, in the German Rhine Province, between Bonn and Cologne, was visited by the author in 1899 (see figs. 1 and 2). The whole region lying round about the village is intensively farmed and forms practically one vast garden. Vegetables alternate with orchards with occasional strips of grain or forage plants. The school is what is known as a "people's school." This is the common school of Germany. Only the fundamental branches are taught in these schools, and the whole course is completed in eight years.

The Alfter common school contains 400 pupils and 6 teachers. In this school, as in all others in this province, two hours' instruction weekly in fruit culture, gardening, and general farming during the last two years of the course is required. This has been compulsory by law since 1895. Outline suggestions for this work are sent the principal of the school by the provincial government, as follows:

OUTLINE OF AGRICULTURAL COURSE IN THE HIGHER GRADES OF RURAL SCHOOLS IN THE GERMAN RHINE PROVINCE.

FIRST YEAR.

April and May.—(1) Inner structure of plants; plant cells and tissues and their functions. (2) Outer divisions of plants: (a) The roots—their function in

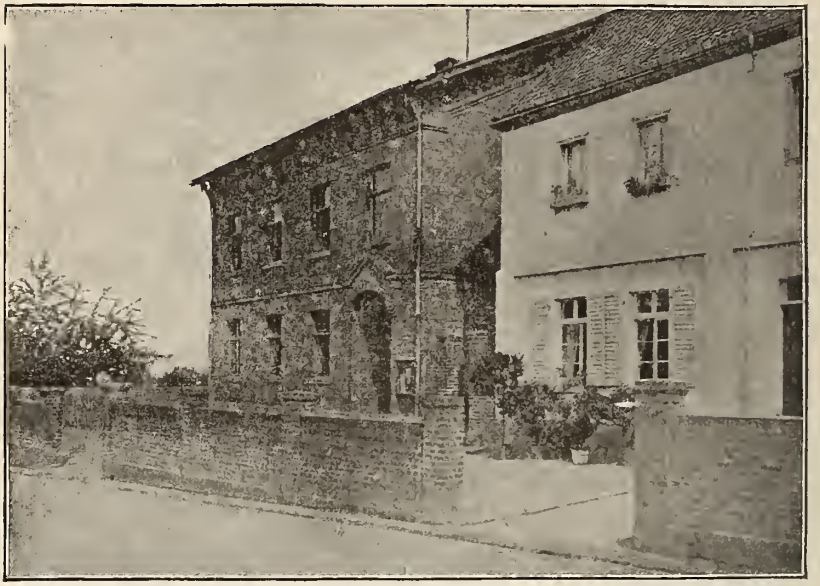

FIG. 1.—Alfter common school. The school building on the left, the principal's residence on the right.

the nourishment of plants by the absorption of mineral matter, as phosphorus, potassium, sodium, iron, chlorin, and water; (b) the trunk—its branches and buds, the structure of the cambium, and the occurrence of ring growths.

June.—(1) The leaf; the nature and function of chlorophyll in the life of the plant and the effect of light on chlorophyll development; breathing of plants; nourishment of plants from atmospheric constituents—carbon, nitrogen, oxygen. (2) The blossom and its fertilization. (3) The fruit; seeds; reproduction of plants by seeds and by division of members.

July.—(1) The soil and its improvement—lime soil, clay soil, loams, sand. (2) The using up of plant food and its replacement by barnyard manure, compost, wood ashes, and indirect manures, as lime and gypsum. (3) Influence of the climate on plants.

August.—(A) Fruit culture. (1) Planting and nursery management of seedlings. (2) The most important methods of fruit improvement—root and stem grafting and budding with active and dormant buds. (3) Management of improved seedlings in the nursery—formation of the trunk and top; transplanting; handling of trained trees, especially espalier forms, with reference to their training against schoolhouse walls. (4) Culture of small fruits—gooseberries, currants, raspberries, strawberries, and blackberries; setting grapevines and their afterculture.

September.—(B) Fruit utilization. (1) Ripening of the fruit; gathering, sorting, and storing winter fruits. (2) Fruit varieties—selection of the more commendable sorts with regard to their suitableness to different climates and soils and at varying altitudes. (3) Drying fruits; preserving; making fruit sirups; wine making. This work is planned especially for the girls.

FIG. 2.—Alfter common school. Pupils pruning trees and doing other work in the school garden under the direction of the principal.

October and November.—(C) Fruit-tree management. (1) Planting trees; pruning the roots and branches; watering newly-set trees and tying to stakes. (2) Care during the first year; top pruning. (3) Management of old trees—rejuvenating by pruning, grafting, and scraping the bark. (4) Diseases of fruit trees and their prevention—knot growths, blights, gum excrescences, and frost injuries.

December.—(1) Enemies of fruit trees in the vegetable kingdom—mistletoe, mildew, lichens, and moss. (2) Animal enemies of fruit trees—rabbit, mole, marmot.

January.—June bug; plum, apple, and pear curculios; wasps; white butterfly; woolly aphis; and winter cankerworm.

February.—Minerals: Soft coal; stone coal; petroleum; clay and its application in the manufacture of pottery and bricks; table salt.

March.—Iron, lead, copper, nickel, gold, silver; German coins.

SECOND YEAR.

April and May.—(1) Garden work—laying out plats, spading, manuring, sowing seed, watering plants, hoeing. (2) Vegetables—white and red cabbage, savoy cabbage, lettuce, spinach, carrots, and onions.

June.—(1) Legumes—beans, peas. (2) Asparagus, cucumbers. (3) Utilization of vegetables—drying, pickling, making into kraut, and preserving. (4) Field work—plowing, harrowing, rolling.

July.—Field crops: Cereals—rye, wheat, oats. (2) Potatoes, beets. (3) Fodder crops—clovers, grasses.

August.—(1) Necessity of crop rotation and consequent methods of manuring. (2) Weeds in garden and field and their eradication. (3) Animal enemies of plants and their control—field mice, phylloxera, asparagus fly, ground flea.

September.—(1) Cabbage butterfly, gooseberry measuring worm, pea weevil, army worm. (2) Useful insects: Bees, ichneumon fly; useful mammals—mole, hedgehog.

October and November.—Plant enemies among the birds—swallow, nightingale, lark, robin, owls.

December.—Domestic animals—dogs, cattle, horses, chickens, doves.

January, February, and March.—Physiology of man.

While this work is laid out for only two years, it practically requires three years for its completion. The plan is intended simply to be suggestive, and it is expected that the teacher will exercise his individual judgment as to time and method of presenting the different subjects and that he will make his instruction along these lines conform to the agricultural needs of the district in which the school is located. Thus at Alfter nearly every possessor or renter of a small piece of ground is an experienced gardener. He understands thoroughly the value of cultivation and the money worth of every pound of compost. His wife and children work in the field with him. The children at an early age have a very clear understanding of garden operations.

In the matter of fruit culture, however, the community is not so far advanced. The principal of this school is at present, therefore, giving especial attention to this branch of horticultural work and for this purpose has planted his garden largely to various fruits. The whole garden contains about one-half acre. Dwarf fruits or flowers border the paths about the garden. A nursery grown from seeds planted by the pupils and afterwards grafted or budded and pruned by them occupies a prominent place. Currants, gooseberries, raspberries, and other small fruits and flowering shrubs, annual and biennial flowers, and some vegetables planted in an orderly manner, serve to utilize every foot of available space. A few hives of bees are located on one side of the garden.

The whole work of spading the soil, planting, seeding, cultivating, pruning, and harvesting the crop in this garden, is done entirely by the boys of the sixth, seventh, and eighth grades under the direction of the principal who always works with them. Two hours a

week is given to this work during the growing season and at such times as the conditions of the garden may require. About 20 boys work in the garden at one time, while the remainder of the pupils of the principal's room are having exercises in gymnastics. At the time of a visit to this school a part of the pupils were sowing seed, others were covering them with soil to the required depth, while still others were laying out paths, picking off the dead leaves from flower stems, replanting beds, watering seeds already sown, etc. A few days later the fruits required attention; wall, espalier, and dwarf fruits require to be summer pruned, the fruits to be thinned, insects to be gathered and destroyed.

The children use the pruning shears and do the actual pruning, each pupil being given an opportunity to trim some portion of a tree; but no twig was allowed to be pruned until it was perfectly clear that that particular twig required pruning and indeed to be pruned in a particular place which the pupil himself first determined upon. The necessary tools for this work are furnished by the school. Whenever there is a deficiency it is made up from the principal's own stock or the children bring them from home. When it comes time for budding each pupil buds trees in the nursery. The fall pruning is always done by the children, and small fruits, vines, and shrubs put in order for the winter by wrapping some with straw, laying others on the earth and covering, and the like.

The garden is intensively farmed and made a source of revenue. The same soil is utilized for two or three crops during the growing season and the produce sold. This gives the pupils an opportunity to learn what crops best form a succession with each other during the season and also gives them practice in a limited way in preparing and putting up fruits, flowers, and vegetables for the market.

The principal purposes to walk through the garden each morning before school. Should he discover a harmful insect or disease, a specimen is immediately taken to the schoolroom and the nature and work of the injurious agent shown to the pupils and discussed. This enemy is especially hunted for during the following work hour and the children are asked to search the gardens at home for similar insects or diseases. Thus by daily association with the garden, daily watching for every new development, and daily discussions and explanations, all the phenomena of the garden are encountered and brought to the attention of the pupils before the year's cycle is at an end.

Occasionally the bees are made the subject of a special lesson in apiculture. One morning a hive swarmed and flew by the school window, alighting on a small tree. The school was taken to observe this phenomena. The queen was found among the mass of clustering bees and was placed in the hive, the workers were gathered and

placed with her, and a new colony was formed. Work in the apiary is incidental but no opportunity is lost to make available anything of an especially instructive nature concerned therewith and in the nature work the history of bees is considered.

So likewise flowering plants in the school windows are incidentally made a means of instruction. The principal's room contains three windows. These are filled with potted plants. The children (boys) are allowed to tend these flowers, to water them, guard them from insects, remove dead leaves and blossoms, and are permitted to have all the cuttings from the plants, either to take home for themselves or to plant in the school garden. The results of this plan are apparent in every garden and window of the village, where flowers are seen growing in greatest profusion.

The principal is the local vineyard inspector and in this work is required to visit the different vineyards from time to time and make careful search for all injurious agents. He is at the same time a member of the Bonn horticultural association and this gives him a wider field for observation and keeps him in touch with progress in horticulture. The principal has been a teacher in the village school for 32 years and has taught horticulture from the first. During these long years of service he has had an opportunity to observe something of the influence of his horticultural efforts in the school room and garden on the community at large. In the matter of vegetable gardening, it is difficult to say what has been the influence of the school in securing the present high state of perfection, though through the principal's efforts the larger part of the present standard varieties of vegetables and fruits have been introduced in the village. It is certain, however, that there has been a decidedly beneficial influence exerted in the matter of flower and fruit culture, an influence which the principal thinks directly traceable to the school room and garden. The children themselves seem to enjoy the garden work. They gather seedlings from the forest, graft or bud them at home, and are soon the possessors of their own fruit trees, and nearly all have little flower gardens or potted plants of their own.

It would be wrong to suppose that all the common schools of the Rhine Province have been equally fortunate in securing such high grade results in agricultural instruction. As a matter of fact, in the great majority of the schools of this province, the instruction in agricultural subjects is almost wholly theoretical. The teachers who make use of the school garden for purposes of instruction are the exception. The majority of teachers in German schools come from the cities and thus have not been in close association with rural life and work. The technique of orchard, garden, and farming operations has never been mastered by them and with only theoretical

knowledge of these subjects the difficulty of successfully teaching them is greatly increased. The principal of the Alfter school ascribes whatever success along horticultural lines he has been able to bring to the school almost entirely to the fact that his early academic teacher was a man who thoroughly understood and who was thoroughly in love with horticultural work. The tendency is to confine the work too largely to the school room. Even from this standpoint, however, the course, when illustrated by good charts, prepared specimens, and the use of simple text-books, has considerable educational value. But the Germans are becoming fully aware of the fact that the complete success of such a course will depend almost wholly on the teaching ability, theoretical and practical knowledge of the subject, and enthusiasm of the individual teacher.

Recommended for publication.

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